

ON SOME NEW SPECIES OF MARINE MOLLUSCA FROM
CHRISTMAS ISLAND, INDIAN OCEAN.

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Read 8th June, 1917.

PLATE XIII.

SOME years ago Mr. R. Kirkpatrick, of the British Museum, made an expedition to Christmas Island, Indian Ocean, for the purpose of securing living examples of a peculiar marine sponge. In this quest he was successful after tedious and difficult dredging, and he brought back a few samples of the sand dredged which have just recently been handed to me for examination for small molluscan forms. The results have been so extraordinary that I hope later, under more favourable circumstances, to furnish a full account of them. I suggest that 200-300 species are represented in the small quantity of sand available, and many are of great systematic interest. I herewith describe a few of remarkable aspect and unknown relationship. These were all sorted from a parcel labelled "Rich Foraminiferal sand, with shells and corallines, 100 fathoms off North-East Point, Christmas Island . . ." The matter is all very dead, but a very few live shells occur which are obviously living in that depth. I do not consider that the majority of the dead shells had, however, lived there, but had been washed down from less depths. In consequence of this result Mr. Kirkpatrick handed over to me a second parcel of the same depth but another place, when most of the previously recognized shells were again observed, with many additional forms. Dr. C. W. Andrews, who made large collections at Christmas Island, and upon whose researches the Monograph of Christmas Island was based, has interested himself, and through his intervention, which is here gratefully acknowledged, I hope to receive new and better material whereby this most interesting fauna can be studied. The peculiar novelties hereafter described may not be in any sense local, but may be widely distributed throughout the Indo-Pacific Region, as I have already noted species not hitherto recorded from the Indian Ocean.

SHERBORNIA MIRABILIS, gen. et sp. nov. (Pl. XIII, Figs. 1-4.)

Shell small, commencing life regularly as a dextral fusiform shell with a short open canal, and upon approaching maturity developing tubular apertures whilst the canal recurves. Thereafter, from the oral aperture, two tubular apertures being persistent at the side opposite and the canal being closed and left also as an aperture, a shelly plate develops in concentric circles forming a platform. This new genus is a further development along the evolutionary lines of the *Triphoridae*, and has so many peculiar features that I have no hesitation in proposing for it alone a new family *Sherborniidae*, which may temporarily be placed next the *Triphoridae*, but I do *not* suggest that this is its true taxonomic position. I am

deeply gratified at being allowed to dedicate this peculiar genus to my friend Mr. C. Davies Sherborn, of "Index Animalium" fame, and I apply to the type (and at present only) species the trivial name of *mirabilis*, an adjective I deem well applicable to my friend also. The nucleus is dextral and glassy, consisting of one and a half whorls, succeeded by strong rounded spiral liræ which develop nodules in some instances: the interstices are plain and there appears to be no longitudinal sculpture. The figures given show the peculiarities of the shell better than a long description. The peculiar specific features cannot be determined until congeners are recognized. The specimens are dead shells and pure white, which seems to be the normal coloration. The complete immature shell measures about 2 mm. in length, while the adult measures about 3 mm. long; in breadth the platform increases the shell from about 1 mm. to 2.5 mm. The tubular apertures present features of importance, though the accessory small tube puzzles the student as to its function. From criticism of many of the Trituba group of Triphoroids I am convinced they are parasitic upon living organisms and use the tubes for circulatory purposes. The present genus appears to have developed a plate in order to secure itself to its host, but what the latter may be I cannot at present suggest: perhaps it is some quickly moving object.

PICKWORTHIA KIRKPATRICKI, gen. et sp. nov. (Pl. XIII, Fig. 6.)

Shell small, turreted, elongate triangular, base flattened, non-umbilicate, mouth small, circular, surrounded by a very heavy varix. This new genus I also consider representative of a new family Pickworthiidae, which may be placed alongside the Liotiidae, but as in the case of the genus just described I would emphasize my inability to pronounce exactly on its correct association. It might be compared to a turreted *Liotina*, but really this would be only a fanciful resemblance.

Type: *Pickworthia kirpatricki*, sp. nov.

The apical whorls are minute, smooth, and three in number; the adult whorls are sculptured with nodules, not arranged longitudinally; the base is very flattened, and no longitudinal sculpture is present. There is no umbilicus, but an umbilical depression is observed bounded by a thick revolving spiral. The sculptured whorls are seven in number.

The nodules appear in two rows to the whorl, an intervening depression separating the rows; the suture between the whorls is deep and marked; the number of nodules to the whorl varies from twelve in the earlier to fifteen in the later ones.

There is no coloration present, the shell being white, vitreous, and solid. The periphery of the last whorl develops a flange-like process, and the nodulous sculpture becomes obsolete as the aperture is reached, while on this last whorl a minor nodulous thread appears between the two major rows. The base is flat, a revolving thread below the peripheral flange being succeeded by a revolving spiral rib which runs round the one bounding the umbilical region. The

mouth is small, circular, duplex, surrounded by the heavy varicose extension which is angulate by the spiral sculpture of the last whorl. The whole mouth system, including the varix, is so oblique that the shell can rest upright upon the base.

Length about 4 mm., breadth 2 mm.

The only genus which I have studied with any care is *Mecoliotia*, Hedley, but that is much smaller and umbilicate. I have not used it, as in this collection I have several minute things which are not congeneric with this species, yet seem nearer to Hedley's genus. This species is named after Mr. R. Kirkpatrick, who collected the sand; while the generic name is given in memory of Dr. Samuel Pickworth Woodward, the distinguished conchologist, who may be spoken of as the father of our science, since his Manual is the basis of the only two later ones in existence, Fischer's and Tryon's.

PICKWORTHIA ANDREWSI, sp. nov. (Pl. XIII, Fig. 8.)

This species seems absolutely congeneric with the preceding, from which it differs in its proportions and detail of sculpture. In the type the apex is missing, but from immature broken shells classed as conspecific it would be three-whorled, turbinate, and dextral. The sculpture consists of nodules, increasing in size but not much in numbers on the five adult whorls. Three rows of nodules are present on each whorl, separated by a well-marked suture. The upper two rows are smaller than the lower, the nodules rather smaller and more or less connected so as to form indistinct retractive longitudinals. On the last whorl this formation is distinct, so that the upper two are almost continuous, while the lowest forms a basal buttress, but not a flange-like process as in the preceding. The nodules of this buttress are elongately continued so as to appear as longitudinals from a basal view. The base is very like that of the preceding, but lacks the post-peripheral thread, while the succeeding spirals are stronger and the umbilical depression is deeper. The varix is not so developed, though similar.

Length, without apex, 2.5 mm.; breadth 1.5 mm.

The species is named after Dr. C. W. Andrews, the pioneer collector of mollusca from this locality.

REYNELLONA NATALIS, gen. et sp. nov. (Pl. XIII, Fig. 7.)

Shell small, elongate, rather conical, base rather flattened, aperture contracted to a small circular opening with duplex, but not varicose, peristome. Again I would introduce a new family, Reynellonidæ, which could be placed near the Pickworthiidæ, but this is mere conjecture. It bears a fanciful resemblance to the figure of *Exelissa formosa*, Lycett, given in Fischer's "Manuel", p. 683, fig. 451, from the "Terrains jurassiques", which was placed in the family Cerithiidæ.

Type: *Reynellona natalis*, sp. nov.

Apical whorls two, dextral, smooth, succeeded by seven whorls sculptured with retractive slanting ribs, which do not increase much in number, but the smooth spaces between become enlarged with the

growth of the shell; thus eleven may be counted on the third whorl, while there are only fourteen on the last; these ribs are prominent, rounded, and not continuous from whorl to whorl. The earlier whorls slowly increase, but at the antepenultimate the increase becomes more rapid, at the last, however, rapidly contracting in the descent to the unvaricosed aperture. The base is sculptured with five deep incisions separating five rounded spiral liræ. There is no umbilicus. The mouth is circular, strongly oblique to the axis, duplex, but not varicose.

Length about 3 mm., breadth 1.5 mm.

I have named this genus after my friend Mr. Alex. Reynell, whose help with regard to literature is again acknowledged.

ANXIETAS PERPLEXA, gen. et sp. nov. (Pl. XIII, Fig. 5.)

Shell minute, conical, base flattened, mouth somewhat quadrangular, edges thin, columella simple, imperforate.

Type: *Anxietas perplexa*, sp. nov.

This peculiar little species gives no clue to its affinities in any way, and I place it in the Trochidæ with considerable reserve, but it has no striking feature whereby it can otherwise be determined. Shell conical, top flattened, sides rounded, almost unsculptured. Colour pale brownish yellow, a darker line at the sutures. Five whorls may be counted, of which the apical two form a planate nucleus, the succeeding three rather rapidly descending but tightly wound with no umbilicus. Below the periphery of the last whorl on the base appear a couple of incised lines close together, but no other sculpture seems present, save a similar incised line above the periphery, which is seen parallel to the suture on the three post-nuclear whorls. Columella simple, erect, a little curved. Aperture oblique, edges thin. Height 1.5 mm., breadth 1 mm.

The names given to this shell express my opinion regarding it. One live shell was recovered, proving that it lived at this depth, with several dead ones. It resembles no juvenile Trochoid I have examined, and that comprises a fair number.

I may observe that these descriptions may be regarded as more or less provisional, subject to extension upon receipt of better material and more species. In any case I hope to furnish with any further detailed account additional figures elaborating the peculiar points of the species.

EXPLANATION OF PLATE XIII.

FIG.

1. *Sherbornia mirabilis*, gen. and sp. n., adult from above. × 11. p. 331.
 2. " " immature. × 15.
 3. " " adult, from below.
 4. " " adult, side view.
 5. *Anxietas perplexa*, gen. and sp. n. × 18. p. 334.
 6. *Pickworthia kirkpatricki*, gen. and sp. n. × 9. p. 332.
 7. *Reynellona natalis*, gen. and sp. n. × 12. p. 333.
 8. *Pickworthia andrewsi*, sp. n. × 14. p. 333.
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